

AMERICAN GOLDFINCH SONG ASSEMBLIES

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According to Alex L.A. Middleton's monograph for the Birds of North America (1993), the song and breeding calls of the American Goldfinch (*Carduelis tristis*) are "characteristic of summer months" with "song heard throughout late spring and breeding season." Perhaps this is true in Ontario, where Middleton lives and works, but on Eastern Long Island goldfinches reach their vocal peak in mid and late April, when the foliage is barely in the first stages of early spring and goldfinch breeding season is still weeks if not months away.

The males, newly molted into their black and yellow breeding plumage, sing long and intense versions of their characteristic "random and warbling" songs. These singing bouts often seem to take the form of song assemblies with numbers of male birds perched high on the bare branches of a circle of trees. These songs are significantly longer, more complex, and more continuous than most of the songs these birds sing later in the season. Sometimes the singers are in adjacent trees, sometimes they are more widely spaced but always within hearing distance and, due to the high perches on leafless trees, usually within visual range as well. In my experience, this behavior appears to involve birds that have over-wintered locally, and the behavior itself might have increased with the steady increase in the numbers of over-wintering goldfinches on LI in recent years (reference).

American Goldfinch is a member of the Carduelinae, the Holarctic Fringillid subfamily that includes siskins, redpolls, crossbills, and Purple and House Finches. *Carduelis tristis* has a number of distinctive traits including distinct winter and summer plumages, the latter produced by an extensive early spring molt that is unique within the subfamily. It is also the latest nester of all our local birds, often raising young well into June, July and even August (Middleton 1993). Like most cardueline finches, but unlike the majority of North American songbirds, American Goldfinches do not defend breeding territories (Middleton 1993).

The songs heard in early spring assemblies differ from those given later in the season, and some additional details might be in order. The vocalizations are quite elaborate and include a variety of notes: the familiar rhythmic Contact Call, a longer drawn-out wheeeeeee, typical "sweet, sweet, sweet" sounds, and a variety of tweety warbles, generally in a high pitch range. Although Middleton describes the song as "rambling," it actually has a distinctive form and timbre with short, run-on phrases that can be extended and varied over long periods—sometimes several minutes in length. Because the song is high-pitched with a buzzy or sibilant edge to most of the sounds, it is not often thought to be conventionally musical although from a structural point of view, it is one of the

most elaborate and highly developed songs in our local repertoire. Unlike most bird song, goldfinch song seems to pick up strength as the day advances and, in the week or two before the leafing out of the trees, the songs continue throughout most of the day. A recording of American Goldfinch ensemble singing is provided by Elliott (2004).

Occasionally (but not routinely), individual males indulge in a striking circular song flight. These flights, seen more often later in the season, certainly have the character of courtship display but they do not seem to be connected with territory nor do they seem directed at particular females. This "long song," which is characteristic of the song assemblies as well as the courtship flights, is quite distinct from the much shorter song that dominates later in the season. The latter is the familiar and commonly described vocalization with short repeated phrases. It resembles the common Indigo Bunting song but, in contrast to the bunting, it has a slightly different ("edgier" or "wirier") quality and is somewhat less stereotyped. The difference between the two song types—what I am calling the "long" and "short songs"—is striking and it is curious that it has been so little discussed in the literature.

Although it seems odd that song assemblies should have apparently escaped the notice of latter-day biologists, they were in fact noted by more than one of Arthur Cleveland Bent's correspondents in his *Life Histories of North American Birds* (1968). Francis Beach White writes from Concord, N.J. in 1937: "On arrival in the spring, flocks great or small are likely to cluster in the foliage of large trees and singing goes on by the hour." Bent himself comments on the goldfinches singing "in chorus from the trees."

John Burroughs is quoted as follows: "When the change [in plumage] is complete, and the males have got their bright uniforms of yellow and black, the courting begins. All the goldfinches of a neighborhood collect together and hold a sort of musical festival. To the number of many dozens they may be seen in some large tree, all singing and calling the most joyous and vivacious manner. The males sing and the female chirp and call. Whether there is actual competition on a trial of musical abilities of the males before the females or not, I do not know. The best of feeling seems to pervade the company; there is no sign of quarreling or fighting; 'all goes merry as a marriage bell,' and the matches seem actually to be made during these musical picnics. *** I have known the goldfinches to keep up this musical and love-making festival through three consecutive days of a cold northeast rainstorm."

There are some differences here. As noted above, it is not clear that Long Island breeders actually "arrive" in spring; they might instead represent the same birds that winter here (or winter birds might be augmented by new arrivals). In any case, song assemblies are definitely a feature of early spring. The assumption that the purpose of these aggregations is to make matches may or may not be correct and the numbers cited seem large (and possibly overstated). But the descriptions of the activity otherwise are perfectly consistent with local observations, even to the point of singing through some heavy weather.

What then is the purpose of these music festivals?

Feeders are present in the area where I have made my observations, including feeders supplying the niger seed that these birds prefer. These feeders have certainly helped to attract a concentration of goldfinches to the area.

But it is difficult to understand any other direct connection between the availability of a major food resource and the extensive song bouts.

American Goldfinch song assemblies superficially resemble leks—display grounds where multiple males display close together, at the same time. True leks are characteristic of the most promiscuous bird species, such as Ruffs, birds of paradise, and various cotingas and manakins, in which social pair-bonds are absent and males provide no resources at all to their mates or young (Alcock 1989). American Goldfinches form social pair-bonds and males feed both their mates and their young. Thus, their song assemblies are not true leks—although they might prove to share some similar functions relating to mate choice.

According to Middleton (1993), “song may serve to attract mates, advertise territory and support territorial defense” but he then goes on to say that “territorial behavior in American Goldfinch is debatable” and “the territorial aspects of song need thorough study.” Their late nesting habits—supposed to synchronize with the availability of thistle seed—apparently affect their breeding biology. As notoriously late nesters, it is not easy for them to raise more than one brood. Females solve this “problem” by deserting their mates, leaving them to raise the first brood while they go off with another male to raise a second.

Because of the obvious costs of abandoning their young to the care of poor quality males, females have a lot to gain from any opportunity to assess the relative quality of their potential mates. In fact, among both American Goldfinches and their relatives, House Finches (*Carpodacus mexicanus*), females are known to prefer those males with the brightest coloration, apparently as an indication of health, good genes and ability to find food (reference). Song assemblies clearly would provide female goldfinches an excellent opportunity to sort out male social status and to assess male quality immediately after the spring molt. From the males’ point of view, an opportunity to advertise one’s quality would have obvious advantages if females were at a premium. This appears to be the case among American Goldfinches, among which males live longer than females and sex ratios are skewed as much as 1.6/1 in favor of males in wild populations (Middleton 1993).

Contrary to Burroughs, there are occasional chases between birds, and not all these are love pursuits; I have observed agonistic behavior between breeding-plumaged males. Hill (2002) describes similar behavior in the House Finch: “During the pre-mating period, males sometimes displace one-another from perches, and occasionally one sees males chasing each other.” Are these males simply defending a good feeding source? In my experience, the goldfinch chases described above take place during the music, not during visits to the feeders. In my opinion, this suggests that agonism, like the singing behavior itself, likely has a social function. Although Hill (2002) says of House Finches, “In the absence of territories, male-male interactions play only a minor role in pairing,” it seems quite plausible that, by displacing their rivals during song assemblies, male goldfinches may be advertising their status and quality in front of potential future mates. At the very least, they might be defending preferred singing perches, to enhance their performances.

In a species that is highly social and probably not territorial, social structure may assume an important role in many aspects of its biology including breeding behavior. Whatever their *raison d'être*, these congregations and the ensemble singing associated with them cease abruptly as soon as the trees leaf out. The birds disperse and the majority of them appear to leave the neighborhood.

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